

Remarks/Arguments

The Examiner has rejected claims 1-81 under 35 U.S.C. §112, first paragraph, as failing to comply with the enabled requirements of the statute.

Applicant respectfully submits that the present invention, as originally described and filed, is completely enabling to one of ordinary skill of the art of electronic display devices, and particularly in the field of 3D display devices. It is believed Examiner may not completely understand and appreciate the present invention, and the implementation of the same.

In particular, the Examiner states in paragraph 4 of the rejection:

“Three –dimensional display image simply cannot be created by such arrangement only. Three dimensional display is achieved by firstly having stereo related image displayed on the display screen and then with certain optics to ensure the left eye perspective of the image goes to the left eye and the right eye perspective of the image goes to the right eye of an observer respectively. The claim simply fails to disclose such..... The three dimensional display simply will NOT provide “Multiple different perspectives viewable from multiple different user viewing angles....simply will NOT be able to exhibit both horizontal and vertical parallax...”

This statement by the Examiner makes it clear that the present invention and implementation of the same is not understood. In making this statement, the Examiner has assumed that all three dimensional displays require “stereo related images. This is

simply not true. The Examiner is respectfully directed to pages 2-5 of the specification, where applicant has provided the history of 3D display devices and the evolution of the same. Furthermore, the Examiner is directed to page 10, lines 18-22 of the specification where applicant clearly states “images produced by means of the scanning aperture display of the present invention can be termed holograms.....As described earlier, standard holography is based on optical interference to produce unique light patterns for a given viewing angle. In contrast to stereo related images, the scanning aperture display relies on the viewer’s parallax angle and human persistence of vision.”

It is respectfully submitted that the present invention does not contemplate the generation of stereo images for the left and right eye as proposed by the Examiner. Furthermore, the Examiner is directed to the text starting at page 11, line 1 – page 16, line 24 where the Applicant has taken the time to explain, in detail, how the 3D images of the present inventive device are based entirely on the theory of multiple different perspectives viewable from multiple different user viewing angles. It is therefore submitted that the Examiner’s statement in her rejection based on non-enablement is unfounded and not supported.

The Examiner further states:

“specification fails to teach how could the frame rate of the display device is capable of producing ‘at least 8 viewing angles’....A frame rate of the display device, only controls the rate of image frame being displayed but it does not control the what and where the images are being displayed.....”:

The Examiner is respectfully directed to the specification at page 10, line where it is clearly described that the “display device” includes a display screen 16 and an aperture plate 18. Also, please see page 13, line 5 – page 16, line 14 where Applicant describes at length how the multiple different viewing angles are integral to the present invention. The “frame rate” of the display device is not “only” for the display, and also includes the “frame rate” of the aperture plate which plays an integral part of the holographic images created by the 3D display device of the present invention. The Examiner is directed to page 16, lines 1-24 where applicant describes in detail the frame rate and aperture response.

The Examiner has further stated:

“The parallax of angular viewing the images for achieving stereoscopic image display cannot exceed the angle viewing difference between two eyes of the observer which is very narrow. It is not clear the parallax needed for achieving stereoscopic is capable being viewed at 180 degrees.”

As stated and explained above, the present invention is NOT A STEREOSCOPIC 3D display device. As such, this rejection is completely unfounded and unsupported.

The specification, as originally filed, clearly teaches how the viewing angle of the observer, and their horizontal and vertical parallax have an effect on the image being viewed. This is primarily because the 3D display device of the present invention is “holographic” in nature and NOT STERESCOPIC! The Examiner is encouraged to thoroughly read through applicant’s 48 page specification where each and every aspect of the present invention is clearly described in excruciating detail, down to the angle

calculations for viewing angles and how the same relates to the gap G between the aperture plate and the display device (See, for example, page 13, line 5 – page 21, line 19).

It is respectfully submitted that one of skill in the art would not only understand the invention and how to build the same from the originally filed specification, but could also learn how stereoscopic 3D display is different from holographic 3D display devices. In view of the Examiner's rejections, it is believed that there is a complete lack of understanding of the technology and operation associated with holographic 3D display devices and how the viewing angles of the viewers are integral to the image being viewed.

Withdrawal of the rejections under 35 U.S.C. §112, first paragraph is requested.

Claims 1-81 stand objected to under 35 U.S.C. §112, first and second paragraphs. Applicant will now take the time to explain the claims and invention to the Examiner based solely on the written specification as originally filed with the application.

Regarding paragraph one (1) of the Examiner's rejections, the phrase "multiple different perspectives viewable from multiple different user viewing angles" is clearly described in the specification and is not confusing at all. "...what are these perspectives." the Examiner asks.... See Figures 5-8 and the corresponding description of the same starting at page 11, line 14. As for where they come from, the concept behind holographic 3D image displays is that multiple viewers standing at different viewing angles with respect to the holographic 3D display device will actually see different perspectives of the 3D image. For purposes of clarity, it is respectfully pointed out that the viewers are actually looking at the aperture plate, and the display is behind

the aperture plate. Thus, as selected the apertures on the aperture plate are sequentially opened and closed, the holographic 3D image viewed by the viewer will be dependent on their viewing angle or viewing perspective, as it relates to the display behind the aperture plate and the gap between the aperture plate and display. This concept is clearly described throughout the application text as originally filed.

Regarding paragraph (2) of the Examiner's rejections, the Examiner states "no 'sequencing' of the display can be controlled", "what exactly are the 'sequencing' is being controlled" and " 'sequencing' WILL NOT provide three dimensional images." It is respectfully submitted that the Examiner is WRONG on this point. Once again, this type of rejection clearly suggests a lack of understanding of the art of holographic 3D displays. The history of which is disclosed clearly in Applicant's application, as originally filed. Applicant has built a working model of the present invention as disclosed, and YES, sequencing of selected apertures in the aperture plate in accordance with a displayed image sequence DOES provide a 3D holographic image display.

Regarding paragraphs (3) and (4) of the Examiner's rejections, the applicant would like to point out that the "aperture plate" of the present invention contains many apertures, and in some cases, can include as many apertures as there are pixels on the display positioned behind the aperture plate. From a reading of the Examiner's rejections, it is clear there is a lack of understanding in the operation of the aperture plate as disclosed herein. At no time are all apertures of the aperture plate open during operation as a 3D display device. This would completely defeat the purpose of the present invention (as pointed out by the Examiner). It is the sequential opening and closing of selected apertures in the aperture plate that create the multiple different

viewing angles, and thus the 3D displayed image. Thus, the Examiner's comment regarding claim 9 being "wrong" is completely unfounded, and telling of the lack of understanding of the present invention. Nothing in claim 9 suggests that the aperture plate has all of its apertures open at the same time. The Examiner is directed to Figures 10-14 and corresponding description of the same where it is clearly shown and described that not all apertures of the aperture plate are opened at the same time. It follows from this that Claim 9 is therefore not wrong. See for Example, the specification at page 34, lines 3-6 or page 16, lines 3-6 which discusses aperture configurations.

The Examiner comments that "the aperture plate may have apertures on the plate but will not 'produce' slit apertures". It is respectfully submitted that this is simply not an accurate statement. The aperture plate can be sequenced to open and close the apertures in any predetermined configuration. So, for example, a column of apertures can be opened simultaneously, thereby producing a slit aperture. See Figure 11 and the corresponding description of the same. It is the sequencing of the apertures in the aperture plate positioned in front of the display that actually produces the holographic 3D image to the viewer. From this basic concept, it is respectfully asserted that different viewing angles of the viewer will change the holographic 3D image observed from that viewing perspective. For example, see the specification at page 37, line 7 – page 38 line 4.

Notwithstanding the foregoing, applicant has amended claim 2 to more clearly recite that the sequencing is performed on "predetermined apertures" of the aperture plate. It is believed this should eliminate any confusion associated with the operation of

the aperture plate in conjunction with the display. Withdrawal of this rejection is requested.

With respect to the Examiner's rejections in paragraphs (5) – (7) of the action, applicant has made various amendments to the claims to clarify the same.

Reconsideration and withdrawal of the rejections is requested.

Regarding the paragraph (8) rejection, the Examiner states that the phrase “a number of vertical viewing angles is less than a number of viewing angles recited in claim 41 is completely confusing.” Claim 41, as originally presented recites “The three dimensional display device according to claim 21, wherein a number of vertical viewing angles is less than a number of horizontal viewing angles.” It is respectfully submitted that there is nothing confusing about this claim as originally filed. The limitation simply says the number of vertical viewing angles is less than the number of horizontal viewing angles. It seems the Examiner has left out the word “horizontal” in asserting this rejection. Reconsideration and withdrawal of the rejection is respectfully requested.

With respect to the Examiner's statement at paragraph (9) of the §112 rejections regarding the use of “solid state” in the claims, applicant must seriously question the Examiner's understanding of electronics and electronic terminology. In making this comment, the Examiner has stated:

“It is untreatable all of the elements in the claims are of ‘solid state’ not ‘liquid state’. Is this what the phrase meant?”

It is respectfully submitted that there is no confusion whatsoever to one of basic skill in the art of electronics as to the meaning of the term “solid state”. The applicant is at a loss as to how or why they should respond to this objection. Applicant is of the opinion

that the Examiner, in making such a rejection, has shown little to no understanding of electronic terminology and/or the art of display devices by questioning applicant's use of the commonly known electronic term "solid state" in the claimed invention.

Applicant does not believe a definition or explanation of the term "solid state" is required. The invention is electronic in nature, and as such, one of ordinary skill in the art clearly understands that "solid state", as used in the electronic arts, means no moving parts. For purposes of thoroughness, the Examiner is directed to the specification at page 10, lines 10-11, page 27, line 4 *et seq.*, and page 36, line 10 *et seq.*, which was clearly not read during the examination of the application. Serious reconsideration and withdrawal of the rejection is respectfully requested.

At paragraph 10 of the §112 rejections, the Examiner questions the use of "hybrid" and what is meant by such term. Once again, the applicant directs the Examiner's attention to the originally filed specification at page 40, line 21 – page 41, line 2. Applicant clearly defines "hybrid" in the specification and in accordance to and in compliance with U.S. Patent Practice, such definition is clear. See, MPEP §608.01(o).

Applicant has made various amendments to the claims to address what is believed to be the valid objection/rejections asserted under 35 U.S.C. §112, by the Examiner. The method claims of claims 53-56 have been canceled without prejudice.

In view of the foregoing, it is respectfully requested that all claim objections and all §112 rejections be withdrawn.

Claims 1-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the patent issued to Harrold et al. (USP 5,969,850). Harrold et al. discloses a spatial light modulator, directional display and directional light source. According to Harrold et al,

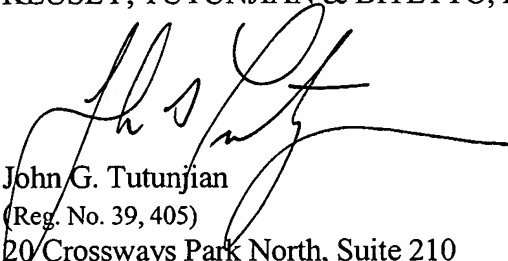
the light modulator is capable of operating in a first clear mode and a second barrier mode. In this barrier mode, a parallax barrier is formed having slits. The concept behind this disclosure is to provide an autostereoscopic 3D image that tracks the movement of the viewer. This completely teaches away from the present invention as claimed in claim 1, which provides multiple different perspectives of a displayed image from different multiple viewer angles. Withdrawal of the rejection is respectfully requested.

Claims 21-81 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the patent issued to Aritake et al. (USP 6,061,083) in view of the patent issued to Harrold et al. (USP 5,969,850). Initially, applicant would like to point out that the cited patents are both related to stereoscopic 3D image presentation, and not holographic 3D images.

Regarding independent claims 21, 42 and 57, each of these claims include the generation of a 3D image exhibiting both horizontal and vertical parallax and the recitation that the 3D display device provides multiple different perspectives of a displayed 3D image viewable from respective multiple different user viewing angles. Independent claims 68 and 76, as originally presented, also include this recitation. Neither Aritake et al, nor Harrold et al., taken singly, or in any combination clearly teach away from applicant's claimed invention. Reconsideration and withdrawal of the rejections is respectfully requested.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's representatives Deposit Account No. 50-1433.

Respectfully submitted,
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